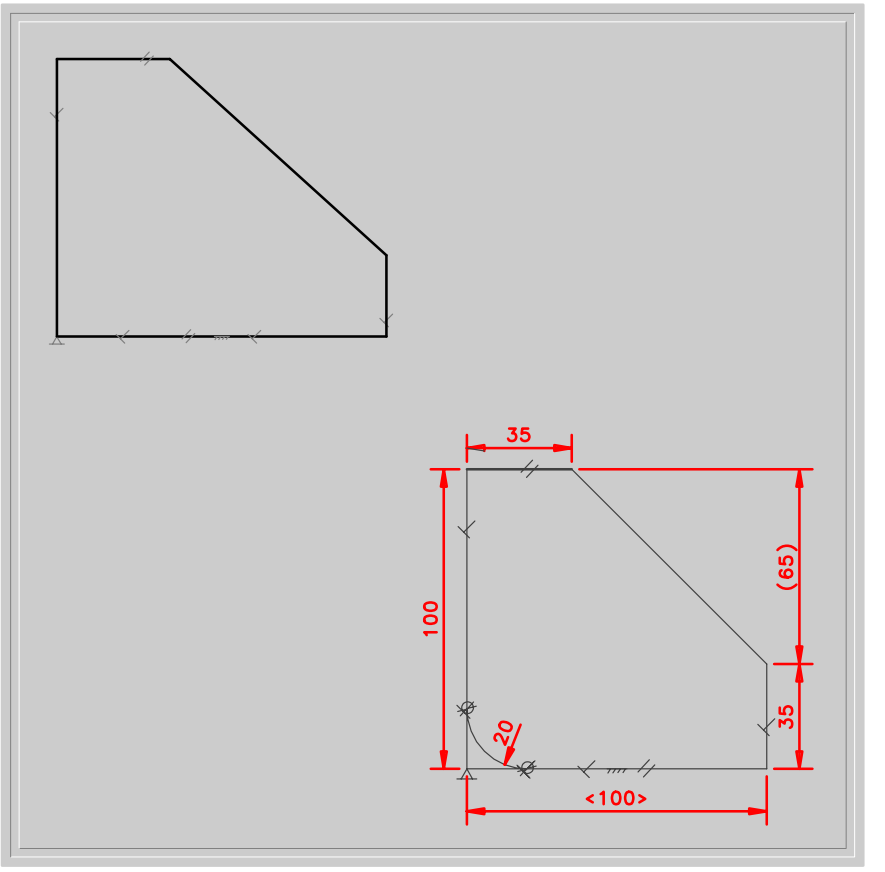


Dimensioning

I-DEAS® Tutorials: Fundamental Skills

Learn how to:

- create dimensions
- modify dimension values
- add a 2D fillet

Before you begin...

Prerequisite tutorials:

1. Introducing the I-DEAS Interface,
   Quick Tips to Using I-DEAS
   –and–
   Creating Parts

Setting your defaults

What:

Before continuing, set the following default options for this tutorial.

How:

Options
Preferences...

Preferences form


Modeler/Assembly...

Modeler/Assembly Preferences form


Drag for extrude creation (off)


OK


OK

Why:

With these recommended settings, the tutorial steps will work as documented. Other settings may cause minor changes in the required steps.


For more information, use *Help, on Context* and then pick the specific item of interest.

If you didn't start I-DEAS with a new (empty) model file, open a new one now and give it a unique name.

File
Open

Open Model File form

Model File name: any unique name
OK

Make sure you're in the following application and task:

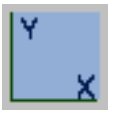
Design, *Manufacturing*, or *Simulation*
Modeler

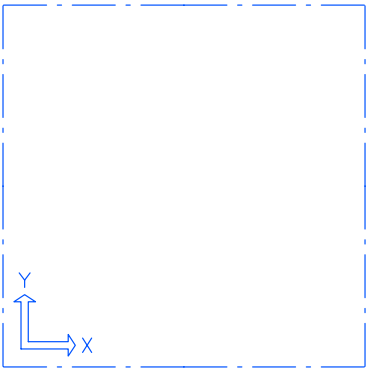
Set your units to mm.

Options
Units

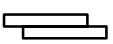
mm (*milli newton*)

Select *Front View* and *Zoom All*



Save your model file.



File
Save

Warning!
If you are prompted by I-DEAS to save your model file, respond:

No

Save only when the tutorial instructions tell you to—not when I-DEAS prompts for a save.

If you make a mistake at any time between saves and can't recover, you can reopen your model file to the last save and start over from that point.

Hint
To reopen your model file to the previous save, press Control-z.

Create dimensions

Dimensions are a special form of constraints. They allow you to control and modify distances between points and lines, while maintaining other geometric constraints and other dimensions.

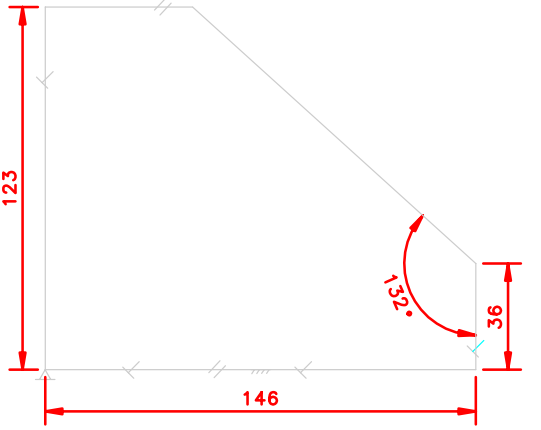
There are many ways to create dimensions:

- point-to-point
- point-to-line
- line-to-line

With options:

- *Horizontal*
- *Vertical*

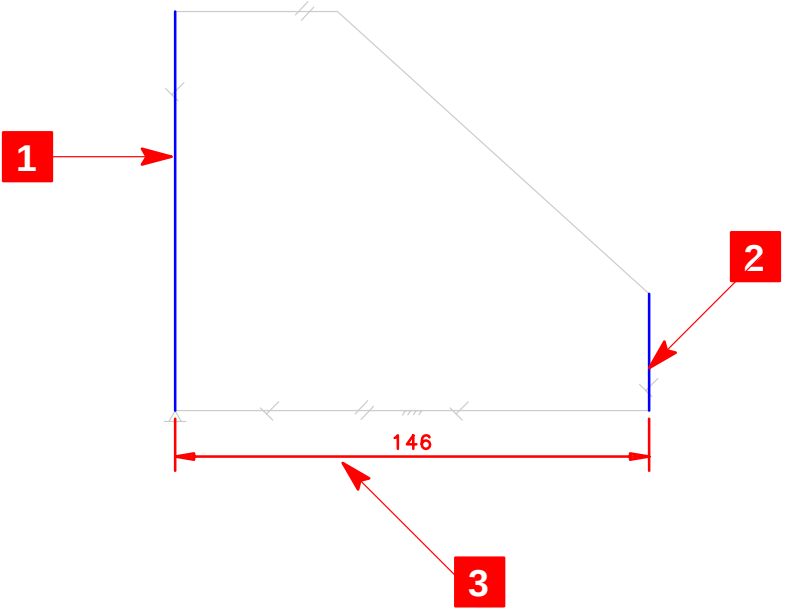
These options are discussed in this section.



Create dimensions 2 of 6

Create a line-to-line dimension like the one shown. Don't worry about the actual value. You will modify dimensions later in the tutorial.

1. pick line
2. pick line
3. place the text



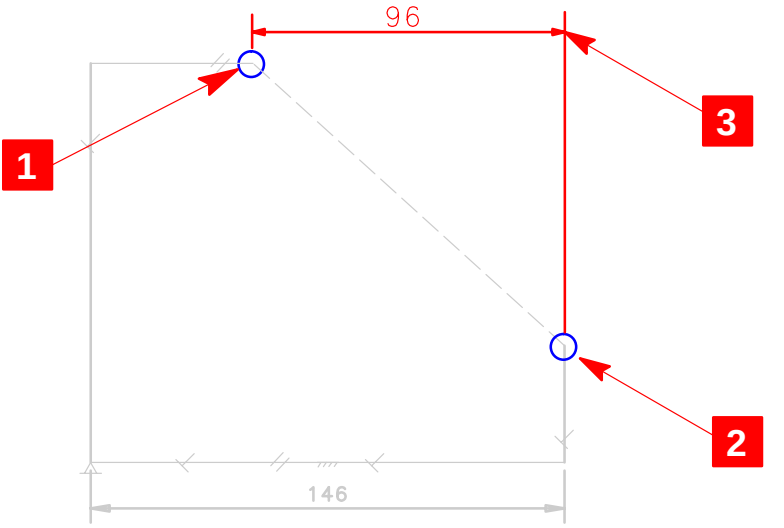
Create a point-to-point dimension, using the *Horizontal* option.

1 pick point

2 pick point

 *Horizontal*

3 place the text



Things to notice

As you add dimensions, the wireframe will change colors:

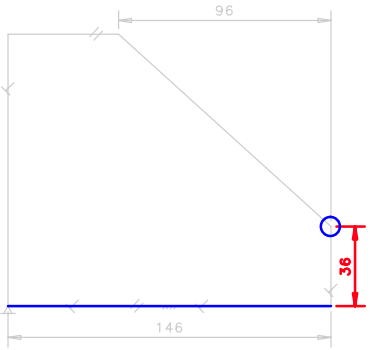
- green = unconstrained
- yellow = partially constrained
- blue = fully constrained

The *Horizontal* and *Vertical* options allow you to control point-to-point dimensions by selecting the horizontal or vertical component of the angled distance.

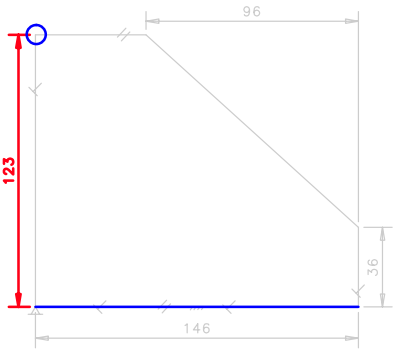
Create dimensions

Create the two vertical dimensions as shown. Create these by picking a line and a point both times.

1. pick point
2. pick line
3. place the text



4. pick point
5. pick line
6. place the text



Create dimensions

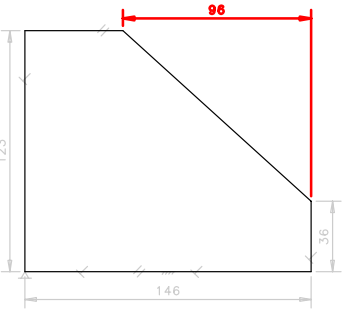
Delete the dimension on the angled face so you can add an angular dimension instead.

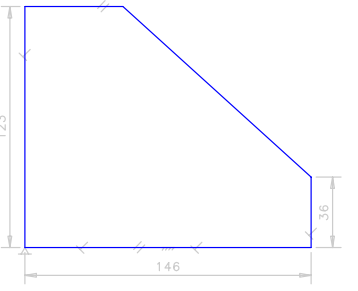
1 pick dimension

 (Done)

 (Yes)

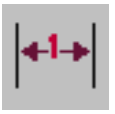
 (to deactivate icon)



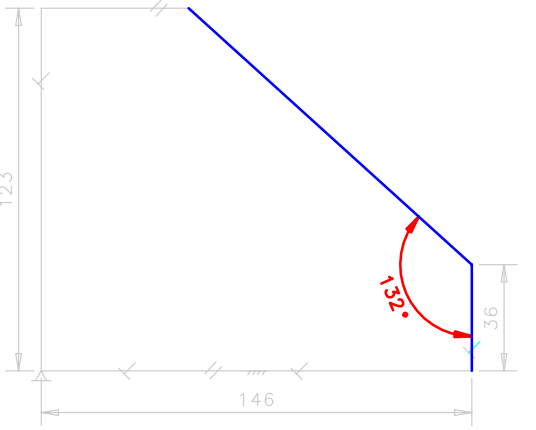


Create dimensions

Now, add the angle dimension.



1. pick line
2. pick line
3. place the text



Recovery Point

File
Save

Modify dimension values 1 of 4

One of the benefits of I-DEAS is that you can sketch the shape and then later modify the dimensions to the size required.

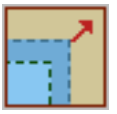
In this section, you learn different ways to modify dimension values.

You can modify dimensions with the:

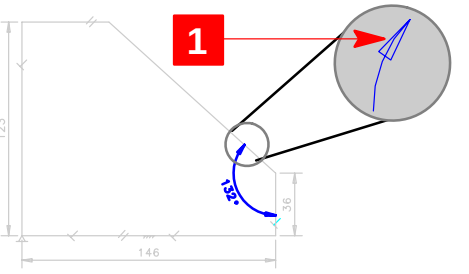
- *Drag* command
- *Modify* command

Modify dimension values 2 of 4

Use the *Drag* icon to change the angle to135 degrees.



1 pick arrowhead

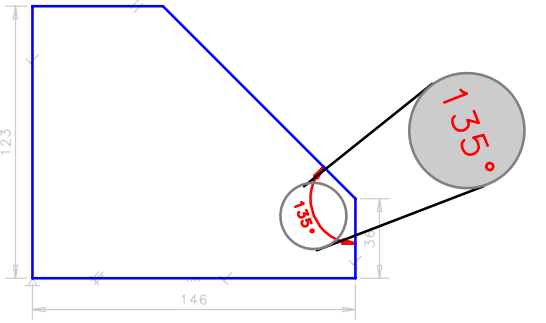


Hint

After picking the arrowhead, move the angled line while watching the degrees in the odometer in the graphics window. When it reaches 135, click the left mouse button.

For dimensions, you can drag:

- an arrow to modify the size of the dimension
- the text to change the location
- a leader to reconnect the dimension to a new location

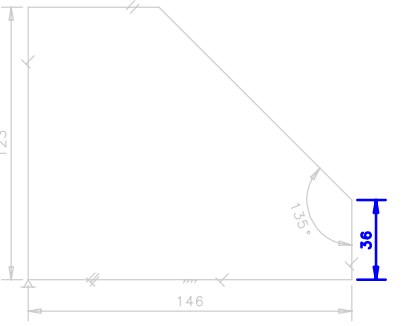


 (to deactivate icon)

Modify dimension values 3 of 4

Use the *Modify* icon to directly modify the two vertical dimensions as shown.

1

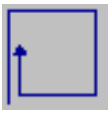


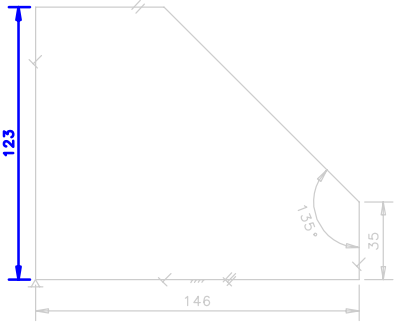
Modify Dimension form

= 35

OK

2





Modify Dimension form

= 100

OK

Modify dimension values 4 of 4

Use the *Modify* icon to match the horizontal dimension to the longer vertical dimension.

Deselect All

1

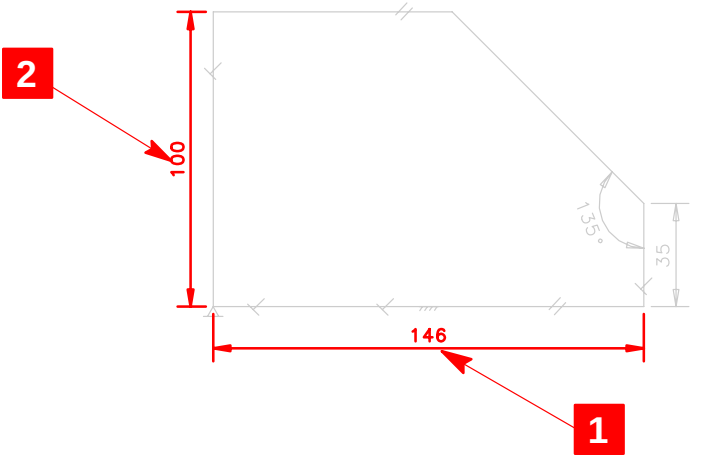
Modify Dimension form

Match

2

OK

(Done)



Things to notice

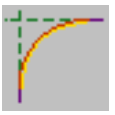
The horizontal dimension that is now matched to the vertical dimension is identified with brackets drawn around it.

Add a 2D fillet

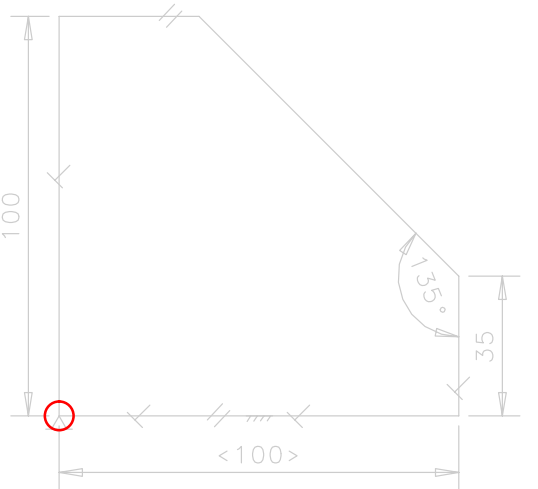
When you create a fillet, it is automatically constrained with a tangent constraint on both ends and a radius dimension. However, you can control the radius and optionally leave the untrimmed curves in place. These untrimmed curves are useful for dimensioning to the “theoretical corner.”

Add a 2D fillet

Add a fillet in the lower corner. Keep the untrimmed curves.



1 pick corner



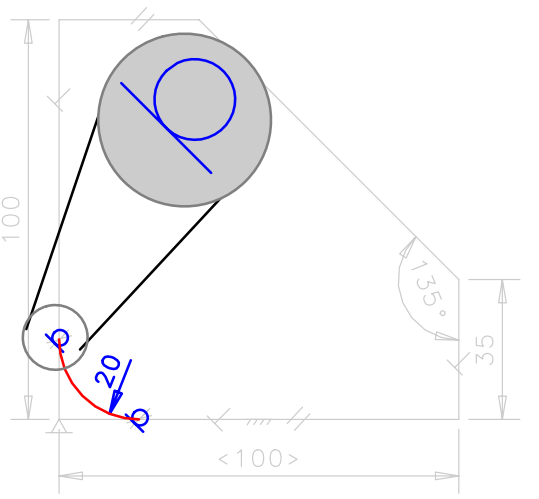
Fillet form

Radius: 20

Trim/Extend (toggle off)

OK

Add a 2D fillet



Things to notice

Constraints (tangent) and dimensions (radius) are automatically created.

Tutorial wrap-up

You have completed the Dimensioning tutorial.